

CHAPTER 1. INTRODUCTION

1.1 PURPOSE AND PROJECT DESCRIPTION

In 1999, King County expanded the service area of its surface water utility to much of the rural area of the County. The County is committed to providing a comprehensive surface water program to these new areas. This rapid rural reconnaissance report provides a general overview of the existing conditions, problems, and identifies high priority capital improvements and opportunities related to surface water, groundwater, and nearshore habitat on Vashon-Maury Island (VMI).

1.2 STUDY AREA

A detail investigation of all of Vashon-Maury Island could not be made at this time because of budgetary constraints. Judd Creek and Shinglemill Creek basins were selected for a detail investigation because they are the largest basins on the island and are experiencing the most growth problems.

The Judd Creek Basin covers 3,292 acres (5.1 square miles) or approximately 14% of VMI and is located in the middle of Vashon Island. Judd Creek, which discharges into Puget Sound through Quartermaster Harbor, is 3.0 miles long. The elevation of the Judd Creek Basin varies from sea level in the south to over 440 feet in the north. Soil types in the watershed are approximately 69 percent till, 30 percent outwash and about 1 percent wetland. Under existing (2001) land use conditions, 2.2 percent of the basin is estimated to be impervious as shown in Table 2-10.

The Shinglemill Creek Basin covers 1,846 acres (2.9 square miles) or approximately 8% of VMI and is located in the northern portion of Vashon Island. Shinglemill Creek, which discharges into Puget Sound near the northwest corner of the island, is 2.7 miles long. The elevation of the Shinglemill Creek Basin varies from sea level to about 420 feet at its southern end. Soil types in the watershed are approximately 98 percent till, 1.5 percent outwash and 0.5 percent wetland. Under existing (2001) land use conditions, 2.0 percent of the basin is estimated to be impervious.

Washington Trout identified 75 drainage basins on Vashon and Maury Island including the Judd Creek and Shinglemill Creek basins. Details of the Washington Trout report can be reviewed on their website http://www.washingtontrout.org/vashon/vashon2001/vashon_title.shtml. The drainage areas of the 73 other basins range from 14 to 1,117 acres. Analysis of these basins did not include modeling and relied heavily on existing information with only limited field investigation to determine existing needs.

The groundwater and nearshore habitat study area is island-wide. The Vashon-Maury Island nearshore accounts for 51 miles of shoreline. Figure 1-1 shows a map of the island and basin delineations.

1.3 PROJECT GOALS

The Vashon-Maury Island rapid rural reconnaissance report has two goals:

- **Characterization**—To produce a rapid, systematic inventory and ecological analysis of stream conditions and drainage systems for both the Judd Creek and Shinglemill Creek drainage basins, covering resources and problems under both current and future land uses. Each subbasin within these two basins was ranked, classified as “impacted,” “sensitive,” or “not supporting,” and identified as “restorable” or not, using definitions



—○— River Mile Post

—●— Stream Gauges

Watercourses (King Co.)

- Mainstem KC Class 2-S
- Watercourses KC Class 2-S
- - - All Other Classifications
- County Boundaries
- Roads
- 100' Contours
- 20' Contours
- Main Basin Boundaries
- Vashon Sub-Basins (Study Area)
- WA Trout Sub-Basins
- Wetlands (KC SAO)
- Parks and Other Public Lands
- Vashon Maury Island Land Trust Properties
- Waterbodies
- Parcels

from *Watershed Vulnerability Analysis* (Center for Watershed Protection 2002). A complete description of the watershed Vulnerability Analysis is included in Appendix G.

- **Action Plan**—To identify high-priority management needs in the study area and to recommend projects, studies, regulations, and programs for surface-water, groundwater, and habitat management.

1.4 PROJECT APPROACH

1.4.1 Characterization

The intent of the rapid rural reconnaissance is to describe ecological stream basin conditions through a thorough analysis of all available data for both the Judd Creek and Shinglemill Creek basins. Using methods outlined in *Watershed Vulnerability Analysis*, the characterization analysis describes the hydrologic, geomorphic, and ecological processes that affect habitat and create surface water problems in each subbasin. The characterization identifies significant resource areas that contribute to ecosystem health, including open space and other highly functioning ecological areas. The characterization identifies significant flooding, water quality, erosion and aquatic resource problems. It also attempts to project the likely future conditions of the basin. For the Judd Creek and Shinglemill Creek basins, the characterization used available information and a limited amount of newly collected additional data. Table 1-1 summarizes the main elements of the characterization process.

TABLE 1-1. MAIN ELEMENTS OF THE BASIN CHARACTERIZATION PROCESS		
Compile Existing Data	Analyze and Interpret Data	Develop Report
Remote Data Aerial photography GIS Data sets Classified Land Cover Public Lands Sensitive Areas Mapping Field Data Stream Typing Rain Gage Data Stream Gage Data Complaint Records Ambient Water Quality Data Published Reports Interviews County staff, other Agencies, Citizens	<ul style="list-style-type: none"> ▪ Conduct hydrologic analysis ▪ Calculate impervious surface areas ▪ Analyze existing data ▪ Review published reports ▪ Analyze remote and field data ▪ Analyze existing reports and data on major private and public development projects ▪ Analyze complaint records ▪ Conduct air photo analysis of land use and habitat conditions. ▪ Conduct targeted field inspections of likely aquatic habitat and surface water problems. 	<ul style="list-style-type: none"> • Description of important hydrologic, geomorphic and ecological processes affecting basin • Description of significant resource areas and habitat functions warranting protection • Description of significant surface water problems warranting remediation • Description of likely future basin conditions

1.4.2 Action Plan

The action plan identifies projects for inclusion in a comprehensive 6-year capital improvement program (CIP) that will reduce risks posed by surface water and groundwater problems to human health and safety, rural infrastructure, personal property, and aquatic resources. The projects resolve surface water, groundwater, and nearshore problems in a way that either maintains or improves aquatic habitats. Table 1-2 describes the general types of activities included in the action plan.

1.5 REPORT CONTENTS

This report represents a reconnaissance level plan for both the Judd and Shinglemill Creek drainage basins. It characterizes the existing stream and basin conditions of these two streams and describes capital improvements needed to reduce existing flooding, protect or improve water quality, protect or improve habitat, and improve the overall health of these two basins. The report also identifies other island-wide surface water, groundwater, and habitat needs.

Chapter 2 discusses land cover characteristics in the Judd Creek and Shinglemill Creek basins and their effects on hydrology and habitat. Chapter 3 analyzes basin hydrology for pre-development, existing (2001), and future conditions. Chapters 4, 5, 6, and 9 discuss the island's groundwater, geomorphology, water quality, and drainage impacts and needs. Chapter 7 contains stream habitat analysis for Judd and Shinglemill Creeks and a general discussion of island-wide habitat needs. Chapter 8 summarizes conditions of the island's nearshore areas. Chapter 10 summarizes the findings in Chapters 4 through 9 and contains the results of watershed vulnerability analyses for the Judd Creek and Shinglemill Creek basins. Chapter 11 discusses the actions that have been identified and provides a recommended action plan.

1.6 PUBLIC INVOLVEMENT

The County and the consultant performing this study met with the Vashon-Maury Island Groundwater Protection Committee and leadership from the Vashon-Maury Island Land Trust and other watershed groups on April 3, 2003.

The purpose of the meeting was to introduce the design team, describe the scope of work, present an initial screening of projects, discuss a draft prioritization process, and discuss how to solicit input from the broader Vashon-Maury Island community. Input from the attendees was used to complete the draft report and plan a community-wide meeting scheduled for early 2004.

TABLE 1-2.
TYPICAL ACTIVITIES INCLUDED IN ACTION PLAN

Description	Purpose	Typical Examples
Restore ecosystem processes	Restore natural flows and sediment regimes to alleviate downstream problems and improve system-wide habitat conditions.	<ul style="list-style-type: none"> Protect or acquire significant open space contributing to ecosystem health (e.g. headwater wetlands, groundwater recharge areas, estuarine salt marsh areas, riparian areas). Reduce impervious surfaces and cleared, compacted lands e.g. gravel parking areas. Increase natural forest cover and soil depths. Improve infiltration of surrounding soils to mimic natural conditions by planting and other vegetation. Construct retention and detention ponds that correct water quality and flooding problems. Allow natural formation of alluvial fans.
Restore ecological connectivity	Restore fish passage and habitat through reconnection of isolated/fragmented environments.	<ul style="list-style-type: none"> Retrofit undersized or perched culverts, weirs, dams, etc. Restore riparian buffers. Prioritize levee removals. Remove structures from within floodplains, alluvial fans and channel migration areas. Restore side channels.
Address problems where they are expressed on the landscape	Alleviate significant health and safety or aquatic habitat problems with substantial impact on the community.	<ul style="list-style-type: none"> Stabilize or restore stream banks. Install or upgrade culverts. Construct conveyance improvements. Retrofit facilities for retention and detention. Install storm drain lines.
Evaluation	Analyze the effectiveness of identified actions	